STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

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MEMO TO: Roadway Design Project Engineers
Mr. Charles Casey, PE

FROM: Tom Shearin, PE
State Roadway Design Engineer

DATE: November 5, 19970

SUBJECT: Design Exceptions and Pavement Slope

On October 20, 1997, I met with John Wadsworth, Harry Thompson and Debbie Barbour to discuss revisions to Table 1 of the Design Exception policy. Briefly, only notes 2 and 4 of Table 1 are affected by this change.

This revision is the result of the recent replacement of the 26,000 mile priority Interstate System with the requirement that all design exceptions to the 4.9 meter vertical clearance on the entire rural Interstate System and the single routing in urban areas be coordinated with the Military Traffic Management Command Transportation Engineering Agency. This will of course require coordination. Therefore, since FHWA has agreed to handle this coordination for us, we will send all design exceptions relative to the vertical clearance on the Interstate system as mentioned above to them.

We also discussed another area of apparent confusion in design exceptions, i.e. when do you request a design exception for design speed. Historically we requested an exception for design speed when the proposed design speed is less than either the posted speed or AASHTO's requirement for functional classification.

This brings up several questions; for example, if you do request an exception for design speed, do you then relate the remaining design elements to the AASHTO standard or the proposed design speed standards?

We discussed the need to make it known to anyone reading the plans that a design exception was necessary for that project. One suggestion was to show on the title sheet that a design exception was required. Perhaps an asterisk by the design speed and more specific information in the plans at the appropriate location.

Here are other thoughts/comments voiced in the meeting:

⇒ Focus should be on individual design elements.
⇒ If multiple elements need exception, then perhaps this signals a need to revise the design speed.
⇒ Show design speed on plans instead of k factor.

The normal crown pavement slope was also discussed. A recommendation of the Hydroplaning Committee was to increase the normal crown slope from 2.08% to 2.5%. After several months of thinking about this and discussions with the FHWA and a couple of pilot projects, we are ready to put this into general practice at certain locations.

The steeper slope (2.5%) should be considered on projects that are east of Interstate 95 and have mainline grades less than 0.5%. However, this slope should not be used on two-lane pavements crowned in the center, including two lanes of a 4-lane divided section. We should maintain a 4% maximum rollover in that case.

Please share this with your squad leaders. We want to discuss this at the staff meeting on November 17, 1997.

GTS/HMT

Attachments

cc: R. L. Hill, PE
Harry Thompson, PE
Debbie Barbour, PE
John Wadsworth, PE

Proposed Revision

TABLE 1

SYSTEM	PROJECT TYPE and ESTIMATED COSTS	FHWA APPROVAL	DOH APPROVAL
INTERSTATE	New/Reconstruction > $1 Million	X (1) (2)	
	All Type Work < $ 1 Million		X (2)
	3-R Work > $1 Million		X (2) (3)
NHS OFF INTERSTATE	New/Reconstruction > $1 Million	X (1)	
	All Type Work < $1 Million		X
	3-R Work > $1 Million		X (3)
ALL OTHERS	All projects		X

(1) FHWA approval required for Federally funded projects. Design exceptions on non-Federally funded projects are approved by appropriate DOH Official.

(2) Design exceptions for vertical clearance on the Interstate System require FHWA approval.

(3) Design exceptions approved by DOH when project is exempted from FHWA oversight or when Federal funds not involved.

TABLE 1

SYSTEM	PROJECT TYPE and ESTIMATED COSTS	FHWA APPROVAL	DOH APPROVAL
INTERSTATE	New/Reconstruction > $1 Million	X (1) (2)	
	All Type Work < $ 1 Million		X (2)
	3-R Work > $1 Million		X (2) (3)
NHS OFF INTERSTATE (4)	New/Reconstruction > $1 Million	X (1)	
	All Type Work < $1 Million		X
	3-R Work > $1 Million		X (3)
ALL OTHERS	All projects		X

(1) FHWA approval required for Federally funded projects. Design exceptions on non-Federally funded projects are approved by appropriate DOH Official.

(2) Design exceptions for vertical clearance on the 26,000 mile priority Interstate System require FHWA approval. See Fig. 1

(3) Design exceptions approved by DOH when project is exempted from FHWA oversight or when Federal funds not involved.

(4) The National Highway System is defined as North Carolina's current principal arterial system pending approval of a designated NHS (1994).